

Name \_\_\_\_\_

## Cell Division Discussion

1. How did you develop from a single-celled zygote to an organism with trillions of cells?
2. How many mitotic cell divisions would it take for one zygote to grow into an organism with 100 trillion cells?
3. How is cell division important to a single-celled organism?
4. How does the genetic information in one of your body cells compare to that found in other body cells?
5. What are some advantages of asexual reproduction in plants?

6. Why is it important for DNA to be replicated prior to cell division?

7. How do chromosomes move inside a cell during cell division?

8. How is the cell cycle controlled in normal cells?

9. What would happen if the control were defective?

10. How are normal cells and cancer cells different from each other?

11. What is the significance of the fact that chromosomes condense before they are moved?

12. What would happen if the sister chromatids failed to separate?

13. How do sexually reproducing organisms produce gametes from diploid progenitors?

14. How does the process increase gamete diversity?

15. What are the outcomes from independent assortment and crossing over?

16. When is the DNA replicated during meiosis?

17. Are homologous pairs of chromosomes exact copies of each other? Explain

18. What is crossing over?

19. What physical constraints control crossover frequencies?

20. What is meant by independent assortment?

21. What happens if a homologous pair of chromosomes fails to separate, and how might this contribute to genetic disorders such as Down syndrome and cri du chat syndrome?

22. How are mitosis and meiosis fundamentally different?